

CLAIMS

1. In a method of producing an electrochromic device, said method comprising the steps of: providing a first electron conducting layer on a substrate, providing a working electrode in communication with the first electron conducting layer, providing an ion conducting layer in communication with the working electrode, providing an ion storage electrode in communication with the ion conducting layer, and providing a second electron conducting layer in communication with the ion storage electrode, the improvement wherein at least one and less than all of the providing steps comprise(s) plasma enhanced chemical vapor deposition.
2. The method of claim 1, wherein the method is free of wet chemical deposition techniques.
3. The method of claim 1, wherein all of the providing steps comprise deposition under a vacuum.
4. The method of claim 1, wherein all of the providing steps comprise either plasma enhanced chemical vapor deposition or vacuum sputtering.
5. The method of claim 1, wherein only the working electrode is provided by plasma enhanced chemical vapor deposition.
6. The method of claim 1, wherein only the working electrode and the ion storage electrode are provided by plasma enhanced chemical vapor deposition.
7. The method of claim 1, wherein the first electron conducting layer, the ion conducting layer and the second electron conducting layer are provided by vacuum sputtering.
8. The method of claim 7, wherein only the working electrode and the ion storage electrode are provided by plasma enhanced chemical vapor deposition.
9. The method of claim 1, wherein the electrochromic device is completely solid state.

10. The method of claim 1, wherein the working electrode comprises WO_3 deposited by plasma enhanced chemical vapor deposition.

11. The method of claim 1, further comprising providing a bottom barrier layer between the substrate and the first electron conducting layer and/or providing a top barrier layer above the second electron conducting layer.

12. The method of claim 1, wherein the working electrode is provided in communication with the first electron conducting layer before or after the second electron conducting layer is provided in communication with the ion storage electrode.

13. The method of claim 1, wherein the substrate is glass predeposited with a bottom barrier layer and the first electron conducting layer.

14. A method of producing an electrochromic device comprising a first electron conducting layer on a substrate, a working electrode in communication with the first electron conducting layer, an ion conducting layer in communication with the working electrode, an ion storage electrode in communication with the ion conducting layer, and a second electron conducting layer in communication with the ion storage electrode, said method comprising:

providing by plasma enhanced chemical vapor deposition at least one and less than all of the first electron conducting layer, the working electrode, the ion conducting layer, the ion storage electrode, and the second electron conducting layer; and

providing by vacuum sputtering each of the first electron conducting layer, the working electrode, the ion conducting layer, the ion storage electrode, and the second electron conducting layer not provided by plasma enhanced chemical vapor deposition.

15. An electrochromic device produced by the process of claim 1, said device comprising a first electron conducting layer on a substrate, a working electrode in communication with the first electron conducting layer, an ion conducting layer in communication with the working electrode, an ion storage electrode in communication

with the ion conducting layer, and a second electron conducting layer in communication with the ion storage electrode, wherein the at least one layer deposited by plasma enhanced CVD has enhanced contact with at least one adjacent layer.

16. An apparatus adapted to perform the method of claim 1, said apparatus comprising:

at least one vacuum chamber adapted to plasma clean a surface of the substrate;

at least one vacuum chamber adapted to deposit at least one coating on the substrate by plasma enhanced CVD; and

at least one vacuum chamber adapted to deposit at least one coating by sputtering.